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July 22, 2004

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-18 (Cancelled).

19 and 20 (Cancel).

21. (Currently Amended) A method of producing a peptide or protein expression library which displays a population of peptides or proteins, wherein the peptides or proteins are specifically associated with the DNA encoding them through covalent binding of the peptides or proteins ~~protein~~ to the encoding DNA, said method comprising at least the following steps:

1) preparing a genetic library of a population of DNA molecules, each DNA molecule comprising:

(a) a nucleotide sequence encoding a binding moiety comprising an amino acid sequence which is a *cis*-acting DNA binding protein which binds specifically to the DNA encoding sequence through covalent binding of the amino acid sequence to DNA, and

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(b) a nucleotide sequence encoding a display moiety comprising an amino acid sequence for display, and wherein the display moiety comprises at least one site of attachment for the binding moiety, and

2) expressing the genetic library thus formed whereby the population of peptides or proteins is produced each specifically associated with and covalently bound to the DNA encoding sequence through covalent binding.

22. (Previously Presented) The method as claimed in claim 21 wherein expression of the genetic library is performed *in vivo* with at least one copy of a single library member expressed per host cell or organism.

23. (Cancelled).

24. (Previously Presented) The method as claimed in claim 21 wherein expression of the genetic library is performed *in vitro*.

25. (Previously Presented) The method as claimed in claim 21 wherein said *cis*-acting protein is the P2 A protein.

26. (Previously Presented) The method as claimed in claim 24 wherein said expression is performed in the presence of a mis-match oligonucleotide which hybridizes

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to the DNA adjacent to the attachment site on both sides but that does not hybridize to the attachment site.

27. (Previously Presented) The method as claimed in claim 21 wherein said amino acid sequence for display is up to 40 amino acid residues.

28. (Previously Presented) The method as claimed in claim 21 wherein said amino acid sequence for display is generated by, or comprises DNA fragments from, cloning.

29. (Currently Amended) A method as claimed in claim 21 wherein said binding moiety is ~~derived from P2A which has been~~ modified by replacement of tyrosine at amino acid position 450 with phenylalanine.

30. (Cancelled).

31. (Currently Amended) A DNA molecule comprising:

i) a nucleotide sequence encoding a binding moiety comprising an amino acid sequence that is a cis-acting DNA binding protein that binds specifically to the DNA encoding sequence through covalent binding of the amino acid sequence to the DNA encoding sequence, and

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ii) a nucleotide sequence encoding a display moiety comprising an amino acid sequence for display, the display moiety comprising at least one site of attachment for the binding moiety.

32. (Previously Presented) A DNA vector comprising the DNA molecule as claimed in claim 31.

33. (Cancelled).

34. (Currently Amended) A method of identifying a specific target-binding peptide or protein, said method comprising: ~~at least the steps of~~

a) contacting ~~screening~~ a peptide or protein expression library produced according to the method of claim 21 with a target molecule, and

b) selecting and isolating a library member that binds ~~binding~~ to said target molecule, and

c) isolating from said library member the peptide or protein ~~which binds~~ specifically that is bound to said target molecule.

35. (Currently Amended) The method as claimed in claim 34 further comprising isolating from said library member the DNA sequence encoding the peptide or protein that binds specifically to said target molecule.

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36. (Currently Amended) A method of assaying for the presence of a target molecule in a sample, said method comprising

(a) contacting said sample with a molecular probe comprising

(i) a peptide or protein target-binding moiety ~~capable of that~~ selectively ~~binding binds~~ to said target molecule, wherein said target-binding moiety is covalently bound to DNA encoding said target-binding moiety and

(ii) a reporter moiety

wherein said contacting is effected under conditions such that said target-binding moiety can bind target molecule present in said sample selectively; and

(b) detecting the presence of reporter moiety bound to said target-bound molecular probe.

37 and 38 (Cancelled).

39. (Previously Presented) The method according to claim 21, wherein said nucleic acid encoding said amino acid sequence for display is generated by amplification by PCR.

40. (Previously Presented) The method according to claim 21 wherein the cis-acting protein is  $\phi$ X174.